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UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF PUBLIC ROADS  
DIVISION OF AGRICULTURAL ENGINEERING

MONTHLY NEWS LETTER

WASHINGTON, D. C., APRIL 20, 1927.

BIDS SECURED IN THE FIELD FOR EQUIPMENT OR SUPPLIES MUST ALWAYS BE SIGNED BY A DULY AUTHORIZED REPRESENTATIVE OF THE FIRM, AND IN TRANSMITTING THESE BIDS TO WASHINGTON FOR APPROVAL IT SHOULD BE STATED THAT THE BIDS WERE ALL OPENED ON THE SAME DATE.

THE COMPTROLLER GENERAL HAS RULED THAT A TELEGRAM THAT CONTAINS PERSONAL MATTERS, SUCH AS REFERENCES TO LEAVE, IS NOT AN OFFICIAL TELEGRAM EVEN IF OTHER PARTS OF THE TELEGRAM REFER TO OFFICIAL BUSINESS.

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S. H. MCCRORY IS A MEMBER OF A COMMISSION TO MAKE RECOMMENDATIONS WITH REFERENCE TO THE HANDLING OF THE EVERGLADES OF FLORIDA. MR. MCCRORY WENT TO FLORIDA MARCH 19 AND WILL BE ENGAGED IN THE WORK OF THIS COMMISSION UNTIL ABOUT MAY 1.

A. T. MITCHELSON AND FRED C. SCOBAY, IRRIGATION ENGINEERS, UPON INVITATION OF PROFESSOR FRANKLIN THOMAS OF THE COMMITTEE OF IRRIGATION HYDRAULICS, AMERICAN SOCIETY OF CIVIL ENGINEERS, MADE A TRIP TO PASADENA, CALIFORNIA, TO BE PRESENT AT A SERIES OF TESTS TO BE HELD AT THE CALIFORNIA INSTITUTE OF TECHNOLOGY TO DEVELOP DATA RELATIVE TO DISCHARGE LOSSES IN SIPHON SPILLWAYS WITH A VIEW TO IMPROVING THE DESIGN OF SUCH STRUCTURES SO AS TO INCREASE THE OVERALL EFFICIENCY. TWO DAYS WERE DEVOTED TO CONSULTATION WITH THE MEN IN CHARGE OF THE TESTS, THE RESULT OF THE CONFERENCE BEING THAT THE ACTUAL TESTS WERE POSTPONED UNTIL THE LATTER PART OF APRIL IN ORDER THAT SUGGESTED CHANGES MIGHT BE MADE IN THE EQUIPMENT. DURING THE TRIP IT WAS LEARNED THAT THE LOS ANGELES COUNTY FLOOD CONTROL DISTRICT CONTEMPLATED THE INSTALLATION OF SEVERAL SIPHON SPILLWAYS IN THEIR SYSTEM.

M. C. BETTS, ON MARCH 22, ATTENDED A CONFERENCE OF MEMBERS OF THE AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS WHO ARE ESPECIALLY INTERESTED IN FARM STRUCTURES WORK. THE MEETING WAS HELD AT CHICAGO AND WAS FOR THE PURPOSE OF ANALYZING THE FARM STRUCTURES SITUATION AND FORMULATING SUGGESTIONS FOR A BROAD, CONSTRUCTIVE PROGRAM OF STRUCTURES WORK IN THE SOCIETY.





THE CORN BORER ERADICATION CAMPAIGN IS WELL UNDER WAY. THIS PROJECT IS UNDER GENERAL CHARGE OF THE BUREAU OF ENTOMOLOGY. R. B. GRAY OF THIS DIVISION HAS BEEN LOANED TO THE BUREAU OF ENTOMOLOGY AND IS ACTING AS ASSISTANT TO C. O. REED, OF OHIO STATE UNIVERSITY, IN CHARGE OF THE ENGINEERING DIVISION OF THE CORN BORER CONTROL WORK, WITH HEAD-QUARTERS AT TOLEDO, OHIO. L. A. JONES, IN CONNECTION WITH OUR COOPERATIVE WORK OF THE OFFICE OF EXTENSION, HAS JUST RETURNED FROM A TWO WEEKS' TRIP TO THE CORN BORER AREA WHERE HE HAS BEEN ASSISTING IN THE EDUCATIONAL CAMPAIGN, WHICH IS AN IMPORTANT PHASE OF THIS WORK.

H. H. HARRISS OF CALIFORNIA HAS RECEIVED AN APPOINTMENT OF PRINCIPAL ENGINEERING DRAFTSMAN WITH THIS DIVISION. HE REPORTED FOR DUTY APRIL 15 AND WILL BE ENGAGED FOR SOME TIME IN THE PREPARATION OF FARM BUILDING PLANS.

TWO RESEARCH PROJECTS RECENTLY APPROVED ARE: "DETERMINATION OF THE DRAINAGE INDEX OF SOILS," AND "HASTENING THE DECAY OF TREES BY THE USE OF POISONS." THE FIRST-NAMED PROJECT INVESTIGATION WILL BE CONDUCTED BY F. E. STAEBNER. ITS OBJECT IS TO ESTABLISH A DIRECT RELATION BETWEEN SOIL CHARACTERISTICS AND THE DEPTH AND SPACING OF TILE DRAINS. IT IS HOPED THAT THROUGH MR. STAEBNER'S WORK DECISION CAN BE REACHED AS TO THE PROPER DEPTH AND SPACING OF TILE IN A GIVEN SOIL FROM AN EXAMINATION OF THAT SOIL. THE PROJECT WITH REFERENCE TO TREE POISONING WILL BE CONDUCTED BY G. R. BOYD, ASSISTED BY B. S. CLAYTON AND F. O. BARTEL. THIS WILL CONSIST IN POISONING VARIOUS SPECIES OF TREES AT DIFFERENT TIMES OF THE YEAR TO DETERMINE THE EFFICACY OF THIS METHOD AS A MEANS OF CLEARING LAND. THE PROJECT IS BASED ON THE IDEA THAT IF A GROWING TREE IS POISONED ITS DECAY IS HASTENED, AND THAT THIS ACTION EXTENDS EVEN TO THE ROOTS, SO THAT THE GROWTH OF SPROUTS IS PREVENTED AND THE STUMP IS EASILY REMOVED.

W. D. ELLISON HAS BEEN TRANSFERRED FROM CAPE GIRARDEAU, MISSOURI, TO FORT WAYNE, INDIANA, WHERE HE WILL CONDUCT RUN-OFF INVESTIGATIONS IN NORTHERN INDIANA. THIS IS A NEW FIELD SO FAR AS OUR RUN-OFF WORK IS CONCERNED, AND INVOLVES A STUDY UNDER TOPOGRAPHIC AND RUN-OFF CONDITIONS DIFFERENT FROM THOSE EXISTING ON AREAS HERETOFORE STUDIED.

AT THE REQUEST OF THE BOARD OF WATER ENGINEERS OF TEXAS, R. G. HEMPHILL HAS MADE AN ESTIMATE OF DUTY OF WATER FOR A PROPOSED PROJECT TO IRRIGATE LANDS IN FOARD, HARDEMAN, WILBARGER, AND WICHITA COUNTIES FROM THE PEASE RIVER, O. A. FARIS MAKING THE FIELD STUDY. AN ESTIMATE OF 1.45 TO 1.55 ACRE-Feet PER ACRE AT THE POINT OF DIVERSION RESULTED.

PAUL A. EWING RETURNED TO THE BERKELEY OFFICE FROM WASHINGTON DURING THE MONTH, STOPPING AT SEVERAL POINTS ENROUTE.

R. L. PARSHALL STATES THAT A 15-FOOT REINFORCED CONCRETE IMPROVED VENTURI FLUME, WITH CAPACITY OF APPROXIMATELY 700 SECOND-Feet, HAS BEEN DESIGNED FOR THE HOLBROOK IRRIGATION DISTRICT, COLORADO. MR. PARSHALL BROADCASTED A TALK OVER STATION KOA ON THE IMPROVED VENTURI FLUME.





CARL ROHWER REPORTS THAT DURING FEBRUARY AND MARCH OBSERVATIONS WERE MADE ON THE EVAPORATION FROM A COLORADO TYPE TANK IN WHICH THE WATER WAS HEATED TO A TEMPERATURE FROM 20 TO 30 DEGREES WARMER THAN THE AIR. THE RESULTS SHOW THAT EVAPORATION IS STIMULATED UNDER THIS CONDITION AND IS NEARLY THREE TIMES AS GREAT AS THE NORMAL EVAPORATION.

ONE OF THE RESEARCH STUDIES OF THIS DIVISION, IN COOPERATION WITH THE CALIFORNIA DEPARTMENT OF PUBLIC WORKS AND THE UNIVERSITY, IS TO DETERMINE THE LEAST AMOUNT OF WATER THAT MAY BE APPLIED IN IRRIGATION FOR THE ECONOMIC DEVELOPMENT AND UTILIZATION OF THE WATER SUPPLY OF SOUTHERN CALIFORNIA. THE RESULTS OF THESE STUDIES WILL FORM THE BASIS UPON WHICH THE STATE ENGINEER MAY ALLOCATE THE WATER SUPPLY AND DETERMINE THE MINIMUM WATER ALLOTMENTS UNDER WHICH THE STATE WILL APPROVE IRRIGATION ENTERPRISES. THE WORK IS BEING DONE BY HARRY F. BLANEY AND COLIN A. TAYLOR OF THIS DIVISION, AND S. H. BECKETT OF THE UNIVERSITY. THE NATURAL WATER SUPPLY OF SOUTHERN CALIFORNIA AND THE SOUTHWEST GENERALLY, IS EXCEEDINGLY LIMITED WHILE THE DEMANDS FOR WATER ARE GREAT AND THE VALUE OF LAND AND WATER IS HIGH. THE PROBLEM IN THE SOUTHWEST IS THEREFORE ONE OF MAKING THE WATER GO AS FAR AS IS ECONOMICALLY POSSIBLE.

THE MAJOR PART OF THE PRESENT INVESTIGATION IN SAN DIEGO COUNTY IS CONFINED TO CITRUS AND AVOCADO TREES AND GRAPES. A SMALL PLOT WITH FAIRLY UNIFORM SOIL HAS BEEN SELECTED FROM EACH OF ELEVEN TYPICAL FARMS LOCATED IN THE ESCONDIDO, VISTA, FALL BROOK AND COAST AREAS. DETERMINATIONS ARE MADE OF THE AMOUNT OF IRRIGATION WATER APPLIED AND WASTED, SOIL MOISTURE FLUCTUATIONS, RAINFALL, CROP CONDITION, ETC. STUDIES MADE DURING THE PAST YEAR IN THIS AREA INDICATE THAT UNDER NORMAL RAINFALL CONDITIONS TO INSURE NORMAL CROP PRODUCTION THERE SHOULD BE AVAILABLE FOR IRRIGATION AT LEAST, 15 ACRE-INCHES OF WATER PER ACRE FOR A MATURE CITRUS GROVE, 16 ACRE-INCHES PER ACRE FOR A FULL BEARING AVOCADO GROVE AND 5 ACRE-INCHES PER ACRE FOR THE AVERAGE VINEYARD. HOWEVER, NO DEFINITE CONCLUSIONS SHOULD BE DRAWN UNTIL THE END OF AT LEAST ANOTHER YEAR'S INVESTIGATION.

MARCH WAS A BIG MONTH FOR PYROTOL DISTRIBUTION, ESPECIALLY AT THE BARKSDALE PLANT. THE LAND CLEARING SEASON IN THE LAKE STATES OPENED RATHER SUDDENLY AND RESULTED IN A CONSIDERABLE DEMAND. FORTUNATELY, THE AMOUNT IN STORAGE AT BARKSDALE ENABLED US TO SUPPLY THIS DEMAND WITHOUT MUCH DELAY. PYROTOL SHIPMENTS FOR THE MONTH OF MARCH WERE AS FOLLOWS:

BARKSDALE	1,158,100	POUNDS
DUPONT	595,300	"
GIBBSTOWN	441,400	"

G. R. BOYD, IN HIS WORK FOR THE BUREAU OF RECLAMATION MENTIONED IN THE LAST ISSUE OF THE NEWS LETTER, HAS SUBMITTED REPORTS ON THE DRAINAGE AND LANDCLEARING ASPECTS OF TWO SETTLEMENT PROJECTS, ONE NEAR ALBANY, GEORGIA, AND THE OTHER AT MT. HOLLY, SOUTH CAROLINA. AT THE PRESENT TIME, MR. BOYD IS ACCOMPANYING MR. BISSELL, CHIEF ENGINEER, BUREAU OF RECLAMATION, ON AN EXTENSIVE TRIP FOR THE PURPOSE OF EXAMINING PROPOSED SETTLEMENT PROJECTS IN FIVE OTHER SOUTHEASTERN STATES.







IT HAS BEEN DECIDED TO EXTEND SOMEWHAT THE SCOPE OF TERRACING STUDIES BEING MADE BY MR. BARTEL IN NORTH CAROLINA. HE IS AT THE PRESENT TIME INSTALLING SIX NEW FLUMES FOR MEASURING RUN-OFF FROM TERRACED LAND. IT IS THE INTENTION, SO FAR AS FEASIBLE, TO SECURE SUCH DATA WITH REFERENCE TO VARIOUS SOIL AND TOPOGRAPHIC CONDITIONS.

ELMER JOHNSON, ASSISTED BY C. A. BENNETT, IS PLANNING AN EXTENSION OF THE COTTON DRYING STUDIES AT TALLULAH, LOUISIANA, WHICH WILL INVOLVE THE CONSTRUCTION OF AN EXPERIMENTAL DRYER. THIS SUBJECT OF COTTON DRYING IS AROUSING CONSIDERABLE INTEREST IN THE COTTON GROWING SECTIONS. RECENTLY MR. BENNETT ATTENDED THE MEETING OF THE STATE GINNERS ASSOCIATION AT DALLAS, TEXAS, WHERE MUCH INTEREST WAS EXPRESSED IN THE WORK BEING DONE BY THIS DIVISION.

S. J. DENNIS HAS GONE TO MASSACHUSETTS, FOR THE BUREAU OF ENTOMOLOGY, WHERE HE WILL ASSIST THAT BUREAU IN THE ENGINEERING PHASES OF THE CONTROL OF THE GYPSY MOTH. MR. DENNIS' WORK WILL BE PRINCIPALLY CONNECTED WITH SPRAYING MACHINERY. IT IS EXPECTED THAT HE WILL BE IN MASSACHUSETTS ON THIS WORK FOR A MONTH OR TWO.

W. M. HURST IS CARRYING ON, AT THE ARLINGTON FARM, VIRGINIA, EXPERIMENTAL WORK WITH REGARD TO GRAIN DRYING. THIS IS A PHASE OF THE COMBINE HARVESTER INVESTIGATION THAT WAS STARTED LAST SUMMER AND WILL BE CONTINUED IN THE FIELD DURING THE COMING SEASON. W. R. HUMPHRIES IS ASSISTING MR. HURST.

The first part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the theory of the structure of the atom. This is a circular argument, but it is the only way to proceed.

In the second part of the paper, the author discusses the application of the theory of the structure of the atom to the problem of the structure of the nucleus. It is shown that the structure of the nucleus is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the theory of the structure of the nucleus.

The third part of the paper is devoted to a discussion of the application of the theory of the structure of the atom to the problem of the structure of the molecule. It is shown that the structure of the molecule is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the theory of the structure of the molecule.